

REMARKS

This responds to the Office Action mailed on March 13, 2008.

Claims 1, 16, 39, 43, 44 and 53 are amended, no claims are canceled, and claims 70 and 71 are added. Thus, claims 1-53 and 66-71 are now pending in this application. Claims 1, 16, 39, 43, 44 and 53 are amended to further clarify the recited subject matter.

Allowable Subject Matter

Applicant thanks the Examiner for the finding of allowable subject matter.

Claims 22-38, 47-52 and 66-69 were allowed.

Claims 4, 8, 9, 15 and 42 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant has added independent claim 70 and 71, which correspond to allowable claims 4 and 9 written in independent form.

Thus, Applicant respectfully asserts that claims 22-38, 47-52 and 66-71 are in condition for allowance based on the Examiner's previous finding of allowable subject matter.

§103 Rejection of the Claims

Claims 1-3, 6, 7, 12, 14 and 16-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Clingman et al.(U.S. 6,994,762) in view of Belford (U.S. 6,455,397). Applicant respectfully traverses. This rejection has been repeated from the office action dated August 9, 2007. Applicant's response dated November 7, 2007 remains germane, and is hereby incorporated herein by reference. For the sake of brevity and clarity, Applicant limits these remarks to address below the Office's "Response to Arguments."

Claims 5, 21, 39-41, 44-46 and 53 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Clingman et al.(U.S. 6,994,762) in view of Belford (U.S. 6,455,397) and Yamazaki et al. (6,902,616). Applicant respectfully traverses. This rejection has been repeated from the office action dated August 9, 2007. Applicant's response dated November 7, 2007 remains germane, and is hereby incorporated herein by reference. For the sake of brevity and clarity, Applicant limits these remarks to address below the Office's "Response to Arguments."

Office's Response to Applicant's Arguments

On Page 8 of the Office Action, the Office addressed Applicant's arguments.

The Office states: *Applicant's arguments filed 13 November 2007 have been fully considered but they are not persuasive. As stated above, Clingman et al. in view of Belford, and Yamazaki et al. disclose the method for forming a wafer as described in claims 1-3, 5-7, 10-14, 16-21, 39-41, 43-46 and 53. Applicant respectfully clarifies that claims 5, 21, 39-41, 44-46 and 53 were rejected using Clingman et al.(U.S. 6,994,762) in view of Belford (U.S. 6,455,397) and Yamazaki et al. (6,902,616). Claims 1-3, 6, 7, 12, 14 and 16-20 were not rejected using Clingman et al.(U.S. 6,994,762) in view of Belford (U.S. 6,455,397) and Yamazaki et al. (6,902,616), but rather were rejected using Clingman et al.(U.S. 6,994,762) in view of Belford (U.S. 6,455,397).*

The Office states: *the applicant argues Clingman et al. does not teach bonding a semiconductor membrane to a substrate while the substrate is flexed and then straightened the substrate to strain the membrane. Applicant respectfully disagrees, and submits that this is a mischaracterization. Rather, on page 16 to page 17 line 5, for example, of the response dated November 7, Applicant asserted that the strain of Clingman et al. is not induced by straightening the predetermined contour, but rather the strain is caused when the steel layer flexes back to its original, preformed curvature (which compresses the SCP material). In other words, Clingman et al. (1) flatten the steel layer, (2) then bond the SCP material to the flattened steel layer, and (3) then allow the flattened steel layer to flex back to its predetermined curvature to provide the compressive strain to the SPC material (see column 3 lines 44 ff.).*

The Office states: *However, Clingman et al. does disclose placing a layer on a concave portion of a flexible substrate and applying a force to flatten the substrate (claim 7). Applicant respectfully asserts that the SCP is not bonded to the steel layer before the force is applied to flatten the steel layer. Rather, Clingman et al. (1) flatten the steel layer, (2) then bond the SCP material to the flattened steel layer, and (3) then allow the flattened steel layer to flex back to its*

predetermined curvature to provide the compressive strain to the SPC material (*see claim 7 relied upon by the Examiner; see also column 3 lines 44-55*).

Claim 1

Applicant is unable to find, among other things, in the proposed combination of references a method for forming a wafer that includes forming a predetermined contour in one of a semiconductor membrane and a substrate wafer, and bonding the semiconductor membrane to the substrate wafer and straightening the predetermined contour to induce a predetermined strain in the semiconductor membrane when the predetermined contour is straightened, as recited in the claim. In contrast, Applicant respectfully asserts that the SPC material in Clingman et al. is compressed when the steel layer relaxes back to its curvature; and that the SPC material is not strained when the steel layer is straightened. Claims 2-3, 5-7, 10-14 depend on claim 1 and are asserted to be in condition for allowance at least for the reasons provided with respect to claim 1.

Claim 16

Applicant is unable to find, among other things, in the proposed combination of references a method for forming a wafer that includes flexing a substrate wafer from a relaxed, straight position into a flexed position, bonding a portion of the substrate wafer to a semiconductor layer when the substrate wafer is in the flexed position; and relaxing the substrate wafer to induce a predetermined strain in the semiconductor layer, as recited in the claim. In contrast, Applicant respectfully asserts that the SPC material in Clingman et al. is bonded to the steel layer when the curved steel layer is flattened, that the SCP layer is compressed when the steel layer relaxes back from its flattened position to its relaxed, curved position; and that the SPC material is not strained when the steel layer is straightened or flattened. Claims 17-21 depend on claim 16 and are asserted to be in condition for allowance at least for the reasons provided with respect to claim 16.

Claim 39

Applicant is unable to find, among other things, in the proposed combination of references a method for forming a wafer that includes forming a convex contour in a surface of a sacrificial crystalline wafer, and performing a bond cut process to form an ultra-thin semiconductor membrane and bond the ultra-thin semiconductor membrane to a substrate wafer, where the ultra-thin semiconductor membrane is flattened into a flattened position and strained in the flattened position when bonded to the substrate wafer, as recited in the claim. In contrast, Applicant respectfully asserts that the steel layer is flattened, and that the SCP layer is not flattened and is not strained in the flattened position. Claims 40-41 depend on claim 39 and are asserted to be in condition for allowance at least for the reasons provided with respect to claim 39.

Claim 43

Applicant is unable to find, among other things, in the proposed combination of references a method for forming a wafer that includes forming a concave surface in a crystalline wafer, bonding the concave surface of the crystalline wafer to a flat substrate wafer to flatten the concave surface into a flattened position to induce a strain in the crystalline wafer in the flattened position, and polishing the bonded crystalline wafer to thin the crystalline wafer and control the induced strain.

Claims 44 and 53

Applicant is unable to find, among other things, in the proposed combination of references a method for forming a transistor (claim 44) and an electronic system (claim 53) that includes straining a semiconductor layer to form a strained semiconductor layer, where straining the semiconductor layer includes forming a predetermined contour in one of a semiconductor layer and a substrate wafer, and bonding the semiconductor layer to the substrate wafer and straightening the predetermined contour to induce a predetermined strain in the semiconductor layer when the predetermined contour is straightened, as recited in the claims. Claim 45-46 depends on claim 44 and are asserted to be in condition for allowance at least for the reasons provided with respect to claim 44.

CONCLUSION

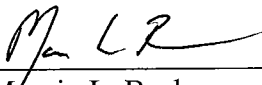
Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 373-6960 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

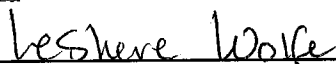
Respectfully submitted,

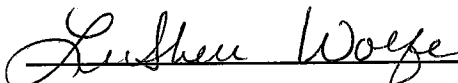
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: MS RCE Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 13th day of May 2008.


Name


Signature